Pusillanthus (Loranthaceae), a New Monotypic Genus from Venezuela

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Abstract. A new monotypic genus of Loranthaceae, *Pusillanthus* Kuijt, is described and illustrated from Venezuela, based on *Phthirusa trichodes* Rizzini. It contrasts with other genera of small-flowered Neotropical Loranthaceae in combining an umbellate capitulum, tetramery, bisexual flowers with nearly sessile anthers, the absence of epicortical roots, and the presence of a conspicuous indument. The other genera have racemic or spike-like inflorescences (rarely solitary, axillary flowers). Species in the genus *Struthanthus* may represent the closest relatives, differing in their versatile anthers, 6-merous flowers, epicortical roots, and (except a single, unrelated Bolivian species) lack of indument; however, that genus is believed to be paraphyletic.

Key words: IUCN Red List, Loranthaceae, *Pusillanthus*, Venezuela.

The species *Phthirusa trichodes* Rizzini (Loranthaceae) was first reported by Rizzini (1956) as *P. guyanensis* Eichler, an error corrected in subsequent publications (Rizzini, 1975, 1982). Its type specimen and other reported specimens were collected in Venezuela, but Rizzini (1982) also cited it from extreme northeastern Brazil (Paraíba), some 2600 km to the west of the type locality, which would seem to be an unlikely outlier. In the meantime, the species has also been collected in Guyana (*Clarke 3729*, as cited below). The apparent rarity of the species may well be a collection artifact, as it would seem to be very inconspicuous.

My study indicates that the species is not appropriately placed in *Phthirusa* Martius or indeed in any other extant genus of Loranthaceae. Study of the diverse plants that have in the past and present been assigned to *Phthirusa* has convinced me that the species represents an isolated taxon that warrants separate generic status.

Rizzini's writing on the sex distribution of the species is inconsistent. In the protologue to *Phthirusa trichodes* (Rizzini, 1975), he speaks of separate male and female flowers, the specimen citations implying dioecy. However, in his treatment for the *Flora de Venezuela* (Rizzini, 1982: 55) he speaks of "flores polígamas," and writes that fruits and pollen-bearing flowers may be found on the same plant. The anthers of a single flower are said to produce pollen or not, and those in the latter condition are referred to as staminodes. The RB holotype is stated to be male, but Rizzini (1982: 55) notes the Brazilian collection from Paraíba as female (*J. Coelho de Moraes 1011*, RB).

In my own dissections, I have found all flowers to be bisexual, and all anthers observed were normal, pollen-bearing ones. Because the flowers and, consequently, the anthers (less than 0.5 mm long) are extremely small, I conclude that Rizzini's observations or material were incomplete—in other words, that the species is characterized by bisexual flowers. This fact has significant taxonomic consequences.

There are several features that separate the species from those normally included in *Phthirusa*. All *Phthirusa* species produce epicortical roots at the base of the plant, and also sometimes from branches; *P. trichodes* lacks any such organs and instead develops a simple, saddle-like haustorial attachment (Fig. 1E). Its capitulate inflorescence has no counterpart elsewhere in *Phthirusa*. The stamens also contrast strongly with those of the common *Phthirusa* species in being isomorphic and lacking the characteristic filament depressions (see the illustrations in Kuijt [1986: 161, fig. 20] and Kuijt & Kellogg [1996: 49, fig. 11]). (The remainder of *Phthirusa*, however, is not uniform in this regard). Tetramerous flowers elsewhere in *Phthirusa* are rare, and present only in species clearly unrelated to *P. trichodes*. All other known species that, now or in the past, have been included in *Phthirusa* are glabrous throughout, while *P. trichodes* has a distinctive indument on all ramifications.

Alternatively, the genus *Struthanthus* Martius could be suggested as a repository for *Phthirusa trichodes*, but it also fails the test. *Struthanthus* is uniformly dioecious, its flowers are hexamerous, and its stamens are versatile and dimorphic, bearing four pollen sacs. No known species of that genus has a capitulum, all having either a spike or raceme, and only one species, a quite unrelated Bolivian one (*S. lewisii* Kuijt), has a recognizable indument (Kuijt, 2003). *Struthanthus* flowers are several times as large as those of *P. trichodes*. Only one other

Figure 1. *Pusillanthus trichodes* (Rizzini) Kuijt. —A. Habit. —B. Inflorescence, subtending leaf, and fruit. —C. Mature bud and dissected flower. —D. Petal and subtended stamen. —E. Haustorial saddle of mature flowering plant. Scale bars: A = 1 cm; B = 1 mm; C, D = 1 mm; E = 1 cm. A, E drawn from *Ferrari G. 1927* (LEA); B–D drawn from *Clarke 3729* (LEA).

species of *Struthanthus*, the unrelated Argentine *S. llanensis* Ruíz Leal (Ruíz L., 1956), is said to lack epicortical roots, although this fact needs to be confirmed. Finally, *P. trichodes* contrasts with both *Phthirusa* and *Struthanthus* in its foliar anatomy (Kuijt & Lye, 2005): it lacks any kind of sclerenchyma and the cristarque cells that characterize practically all studied species of either genus.

In consequence, I propose the following, with an amended description for the one species.

Pusillanthus Kuijt, gen. nov. TYPE: *Pusillanthus trichodes* (Rizzini) Kuijt [= *Phthirusa trichodes* Rizzini].

Plantae minores, caulibus et inflorescentiis gracilibus, omnino praeter folia pilis obtectis, foliis tenuibus, oblanceolatis. Inflorescentiae omnes axillares, singulae, triadibus duabus sessilibus; flores sessiles, petalis 4, staminibus isomorphis.

Pusillanthus trichodes (Rizzini) Kuijt, comb. nov. Basionym: *Phthirusa trichodes* Rizzini, Revista Fac. Agron. (Maracay) 8(3): 92. 1975. TYPE: Venezuela. Lara: Distr. Palavecino, dry forest betw. Terepaima & Cabudare, 500–900 m, 10 Aug. 1970, *J. A. Steyermark, F. Delascio & G. & Y. Dunsterville 103648* (holotype, RB; isotypes, MO, VEN). Figures 1, 2.

Delicate, branched parasitic shrubs, shoots to 1 m, attached to the host by a saddle-shaped primary haustorium 2–5 cm diam.; epicortical roots absent; stems terete, lateral ones subtended by a few short, obtuse scale leaves, the oldest stems densely covered by small, pustule-like lenticels; young shoots with dense, short, straw-colored, simple hairs, especially at the base of the petiole. Leaves to 25 × 6 mm, thin, glabrous or nearly so, with at least 3 basal veins running nearly the length of the blade; petiole 1 mm, blade narrowly oblanceolate, base acute, apex obtuse to rounded. Inflorescence solitary in leaf axil, to 1 cm, peduncle extremely slender; flowers 6, sessile, crowded at the tip in 2 sessile triads forming a capitulum, with very small (ca. 1 mm) bracts and bracteoles. Flowers bisexual, bud ca. 1.5 mm, calyculus smooth, petals 4, ca. 1 mm, isomorphic; stamens isomorphic, anthers ca. 0.5 mm, on very short, thick, tapered filaments, style straight, stigma capitate, with somewhat papillate surface; pollen ca. 25 μm diam., radially symmetrical, triangular, oblate to suboblate, isopolar, syncolpate, with psilate to somewhat rugulate sculpturing. Fruit (immature) at least 2 mm, ellipsoid, said to be orange or red (Figs. 1, 2).

Distribution, habitat, and IUCN Red List category. *Pusillanthus trichodes* is found in arid regions of Lara, Táchira, and Portuguesa (Venezuela), and in dense forest and brown sand in southwestern Guyana from 180–1600 m. A single collection is reported from Paraíba, Brazil, at least 2700 km east of the Guyana collection (Rizzini, 1975). I have been able to study images of the two RB sheets of this collection, and Rizzini's determination of this remarkably disjunct collection appears to be correct. At present, *P. trichodes* can be assessed only as Data Deficient (DD) according to IUCN Red List criteria (IUCN, 2001), and its conservation status remains to be investigated.

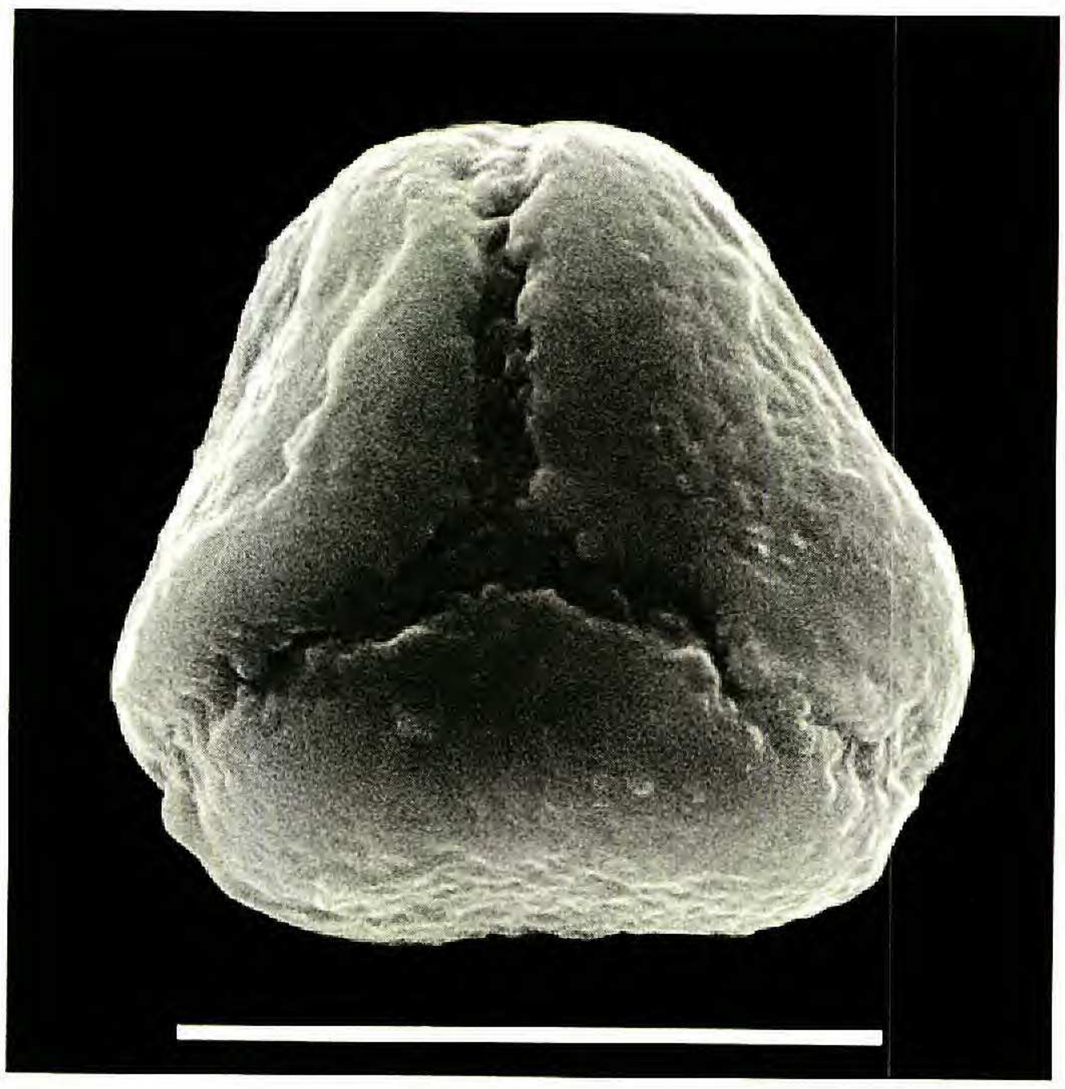

Figure 2. *Pusillanthus trichodes* (Rizzini) Kuijt. Polar view of pollen grain (*Clarke 3729*, LEA). Scale bar = 45 μm.

Relationships. The palynological features as listed above, as well as the triadic nature of the inflorescence, suggest a relationship to especially *Phthirusa* and *Struthanthus* (Feuer & Kuijt, 1985). However, *Pusillanthus* shows a unique combination of characters in its inflorescence structure, indument, tetramerous flowers, haustorial attachment, and anther morphology.

Paratypes. GUYANA. **Upper Takutu–Upper Essequibo Region**: Rewa River, forest 4 km W of camp, betw. camp & unnamed mtn., 2.59′N, 58.35′W, 180 m, *I. Clarke 3729* (LEA, US). VENEZUELA. **Lara**: foothills of Terepaima, 600 m, "sobre Oregano," 20 July 1981, *Ferrari G. 1927* (LEA). **Táchira**: Distr. Lobatera, La Cazadora, 72.18′W, 7.55′N, 1600 m, 21 July 1983, *H. van der Werff & R. Ortíz 5419* (LEA, MO, VEN).

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